SBI4U Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Gairdner Foundation Lectures – October 21, 2015**

*Please read the following descriptions of the award-winning scientists (from:* [*http://www.gairdner.org/content/awards*](http://www.gairdner.org/content/awards)*) who will be speaking at York University today. Answer the questions that follow.*

Salim Yusuf MBBS, DPHIL, FRCP(UK), FRCPC, FACC, FRSC, OC



Recipient of the Canada Gairdner Wightman Award, 2014

"For his exceptional leadership in global clinical trials and population studies of cardiovascular disease that shaped best guidelines for prevention and treatment"

Professor of Medicine, and Executive Director of the Population Health Research Institute, McMaster University and Vice President for Research, Hamilton Health Sciences

Salim Yusuf’s work over 35 years has substantially influenced prevention and treatment of cardiovascular disease globally. Medically qualified in Bangalore 1976, he received a Rhodes Scholarship and obtained a DPhil from Oxford, during which he (along with Richard Peto and Peter Sleight) initiated the concepts of large, simple trials, and meta-analysis. He coordinated the ISIS trial (which set the structure for future international collaborative work in cardiovascular disease) that demonstrated the value of beta-blockers in myocardial infarction, and sat on steering committees for all subsequent ISIS trials.

In 1984, he moved to the National Institutes of Health, Bethesda, USA, where he was a leader in their SOLVD trial (establishing the value of ACE-inhibitors on LV dysfunction) and DIG trial (clarifying the role of digitalis). In 1992 he moved to McMaster University, where he has established an international program of research in cardiovascular diseases and prevention, culminating in the creation of the Population Health Research Institute, which he founded and heads. His therapeutic trials have established the roles of ACE-inhibitors in CVD prevention (the HOPE study), dual antiplatelet therapies in acute coronary syndromes (the CURE study), and the roles of novel antithrombotics and invasive interventions.  The PHRI was recently cited by SCImago as possessing the highest impact of Canadian Centers and the 7th highest impact in the world.

His epidemiologic work in over 60 countries in all the inhabited continents of the world shows the majority of risks of both cardiovascular and cerebrovascular disease are attributable to the same few risk factors. He currently leads the largest ever study revealing  the role of societal changes in CVD among 155,000 people from 700 communities in 22 high, middle and low income countries. These studies have led to better understanding of the role of societal changes on behaviours and risk factors, and how they lead to CVD.

Over the last 3 decades he has built capacity for clinical and population research across Canada (first through the Canadian Cardiovascular Collaboration, and more recently through CANNeCTIN) and the world by establishing networks at over 1500 sites in 85 countries, spanning all inhabited continents of the world. He has trained over 50 researchers, many of whom are nationally or internationally renowned leaders in medical research. He has helped develop major research institutes or programs in Canada, India, Argentina, Brazil, S. Africa, Saudi Arabia, Malaysia, and China.

He holds a Heart and Stroke Foundation of Ontario Research Chair, was a Senior Scientist of the Canadian Institutes of Health Research (1999-2004), and has received over 35 international and national awards for research, induction into the Royal Society of Canada, an appointment as an Officer of the Order of Canada, and in 2014 he will be inducted into the Canadian Medical Hall of Fame.

He has published over 800 articles in refereed journals, rising to the second most cited researcher in the world for 2011.  He is President-elect of the World Heart Federation, where he is initiating an Emerging Leaders program in 100 countries with the aim of halving the CVD burden globally within a generation.

Michael Salter MD PhD FRSC



*Head, Neurosciences & Mental Health, SickKids, Toronto, Ontario, Canada*

Dr. Salter is Head of the Program in Neurosciences & Mental Health and Associate Chief, Science Strategy at The Hospital for Sick Children (SickKids), Professor of Physiology at the University of Toronto.

Dr. Salter received an MD degree from the University of Western Ontario in 1982 and a Ph.D. in Physiology from McGill in 1987. After post-doctoral training at Toronto Western and at Mt. Sinai hospitals, he joined the Research Institute of SickKids in 1990. From 1999 to 2009 Dr. Salter was the founding Director of the University of Toronto Centre for the Study of Pain.

Dr. Salter’s main research focus is on synaptic physiology, in particular in relation to pain, and he has done groundbreaking work that has led to new paradigms about neuroplasticity and about how synaptic transmission in the central nervous system is regulated by biochemical processes within neurons and by glial-neuronal interactions.

His discoveries have broad implications for the control of cell-cell communication throughout the nervous system and his work has regularly appeared in elite journals including Nature, Science, Cell, Nature Medicine and Neuron.  Dr. Salter holds a Canada Research Chair (Tier I) in Neuroplasticity and Pain, and is the Anne and Max Tanenbaum Chair in Molecular Medicine at SickKids.  He has received numerous awards including the E.B. Eastburn Award, the John Charles Polyani Prize in Physiology or Medicine, the Early Career Investigator Award of the Canadian Pain Society, the Distinguished Career Investigator Award of the Canadian Pain Society, and was an International Research Scholar of the Howard Hughes Medical Institute.  He is a Fellow of the Royal Society of Canada.

*Questions:*

1. Name 3 types of medication or therapy to treat cardiovascular disease (CVD) that Salim

Yusuf has researched.

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2. Salim Yusuf’s “epidemiologic work in over 60 countries…shows the majority of risks of

both cardiovascular and cerebrovascular disease are attributable to the same few risk factors.”

What do you think those risk factors are? Name at least 3 of them.

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3. What is cerebrovascular disease?

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4. What do you think is Dr. Yusuf’s most impressive accomplishment? Explain your choice.

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5. Using your textbook (see Chapter 11: The Nervous System), define the following terms:

synapse = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

synaptic transmission = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

neurons = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

glial cells = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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6. Dr. Salter’s current research focus is on “synaptic physiology, in particular in relation to pain,

and he has done groundbreaking work that has led to new paradigms about neuroplasticity

and about how synaptic transmission in the central nervous system is regulated by

biochemical processes within neurons and by glial-neuronal interactions.

a. What do you think “neuroplasticity” is?

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b. Based on the definitions of the terms above, briefly explain what Dr. Salter’s main research

focus is, at a level that a Grade 10 student would understand.

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**TOTAL MARKS: /16 ( %)**